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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,702	06/27/2003	Thomas S. Ellis	DP-309231	9673

22851 7590 02/26/2007
DELPHI TECHNOLOGIES, INC.
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EXAMINER

NGUYEN, DILINH P

ART UNIT	PAPER NUMBER
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2814

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/608,702

Applicant(s)

ELLIS ET AL.

Examiner

DiLinh Nguyen

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4-13,16-22 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,4-12 and 24 is/are allowed.
- 6) ☒ Claim(s) 13,16-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminaga et al. (U.S. Pat. 6257215) in view of Pedder (U.S. Pat. 6005466) and further in view of Matayabas, JR. et al. (U.S. Pub. 2004/0191503).

Kaminaga et al. disclose a overmolded electrical component, comprising:

a circuit board substrate 1 having an electrical circuit;

a semiconductor chip 3 overlying the substrate spaced apart therefrom to create a space therebetween;

a plurality of solder 9 interconnections connecting the electrical circuit trace of the semiconductor chip 3; and

a polymeric 7 overmolding encapsulating the semiconductor chip 3 on the substrate 1 and filling the space between the semiconductor chip and the substrate, the overmolding being formed of epoxy package 7 and an inorganic particulate filler (fig. 1a, column 6, lines 10-15).

Kaminaga et al. do not explicitly disclose the substrate and the chip spaced apart therefrom by a distance of from about 10 to 150 micrometers and the polymeric composite including a thermoplastic resin matrix.

However, Pedder discloses a semiconductor device comprising: a circuit board substrate; a semiconductor chip 1; a plurality of solder bumps 4, wherein the solder bumps diameters between 50 and 125 micrometers are considered appropriate for the flip chip structure (cover fig., column 3, lines 28-30), in order to provide a mechanical support for the semiconductor device structure.

Matayabas, JR. et al. disclose a semiconductor device comprising a thermoplastic matrix (paragraph 0024) having an inorganic particulate filler is a montmorillonite (claim 13) and wherein the inorganic filler content is 0.5 weight percent to 25 weight percent (claim 30) for the purpose of aiding exfoliation in the composite, assure in quality and low molecular weight components through the material (paragraphs 0044 and 0045).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kaminaga et al. by having the substrate and the chip spaced apart therefrom by a distance of from about 10 to 150 micrometers and the polymeric composite including a thermoplastic resin matrix because as taught by Pedder and Matayabas, JR. et al., in order to provide a mechanical support for the semiconductor device structure, aid exfoliation in the composite, assure in quality and low molecular weight components through the material.

- Regarding claims 16-17, Matayabas, JR. et al. disclose that the inorganic filler content is 0.5 weight percent to 25 weight percent (Matayabas, JR. et al., claim 30).

- Regarding claims 18-19, Matayabas, JR. et al. disclose that the thermoplastic matrix (paragraph 0024) having an inorganic particulate filler is a montmorillonite (Matayabas, JR. et al., claim 13).
 - Regarding claim 20, Matayabas, JR. et al. disclose that the thermoplastic resin matrix comprises a resin selected from the group consisting of polymer (claim 1).
3. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaminaga et al. (U.S. Pat. 6257215) in view of Pedder (U.S. Pat. 6005466) and Matayabas, JR. et al. (U.S. Pub. 2004/0191503) as applied to claim 13 above, and further in view of Yu et al. (U.S. Pat. 5153657).

As discussed in details above, the combination of Kaminaga et al. in view of Pedder and Matayabas, JR. et al. substantially disclose all the limitations as claimed above except for the inorganic filler is glass spheres.

However, Yu et al. disclose an inorganic filler is glass spheres (column 13, lines 45) and wherein an average diameter of from about 1 micrometer to about 3 micrometers (column 14, lines 36-37). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select glass spheres as known material, as taught by Yu et al. into the device structure of the above combination for forming the inorganic fillers as being claimed since the glass spheres would maintain good conformance in the lateral direction (column 12, lines 31-32). Moreover, selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co., Inc. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claims Allowed

Claims 2, 4-12 and 24 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DLN


HOAI PHAM
PRIMARY EXAMINER